



UNITED STATES DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

TO RECIPIENTS OF COOPERATIVE SNOW SURVEY AND WATER SUPPLY FORECAST TO PORTS:

Forecasts by U. S. Weather Bureau of total annual streamflow October-September, inclusive, at more than 300 gaging stations are issued monthly January through May in the publication WATER SUPPLY FORECASTS FOR THE WESTERN UNITED STATES.

Weather Bureau forecast, of runoff presented in this bulletin are computed from procedures based on anathematical analysis of the relation between precipitation and runoff.

The Weather Bureau bulletins may be secured by writing to:

Hydrologist in Charge River Forecast Center U. S. Weather Bureau 712 Federal Office Building Kansas City 6, Missouri

FEDERAL-STATE COOPERATIVE SNOW SURVEYS

AMD

IRRIGATION WATER FORECASTS

FOR

MONTANA AND NORTHERN WYOTING

Upper Missouri and Upper Columbia River
Basins

Report Prepared

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and

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> > and

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IRRICATION WATER SUPPLY OUTLOOK FOR SEASON 1953 AS OF MAY 1, 1953

Snow survey measurements made on or about May 1st over the Upper Missouri Basin indicate that the water supply for the irrigation season for 1953 is FAIR to COOD. The snew pack at this time is rather large whon compared to an average consisting of 20 years' record.

Due to the dry fall and mild winter temperatures, a considerable portion of the snow rack is disappearing into the sub-soil. A good portion of the low elevation snow has disappeared, leaving a rather small area of the water shed covered with a relatively deep snow pack. Those irrigation projects under regulated reservoirs will have a good supply this season, while those under unregulated streams will need supplemental water for late July and August irrigation.

The snow pack over the Unner Columbia Basin in Montana has increased considerably during Abril, and some of the courses have more water content on May let than was evident during the last of March. Valley precipitation stations indicated a definite plus departure from normal over most of this basin which necessitated raising the forecast of seasonal volume flow. Reservoir storage is approximately average for this time of year. Antecedent stream flow has been close to median in general, with a few points showing a definite belowmedian trend.

JEFFERSON RIVER: Only a few snow survey courses are measured in the Jefferson River Basin on May lst which indicates a rather normal situation in thet basin. The forecast for this basin was not raised over the April figures.

MADISON RIVER: On the Madison River, the May 1st snow surveys showed a little better than average conditions for May 1st. The snow line is remerkably high, and the area to contribute to runoff will be relatively smaller than last season, even though we have a large water content in the higher elevations.

CALLATIN RIVER: Snow survey measurements made on May 1st indicate relatively the same trend as those on the Madison. The river forecasts for these two streams were raised slightly over the April 1st figure.

MISSOURI RIVER MAIN STEM: The Missouri River main stem below Three Forks will carry a 500d supply of water during the coming season. The water content on the snow survey courses above Helena and at Marias Pass indicate a good water content, although a very high snow line. Stream flow forecasts at Toston and Fort Benton have beer raised slightly due to a plus detarture in predipitation over this basin.



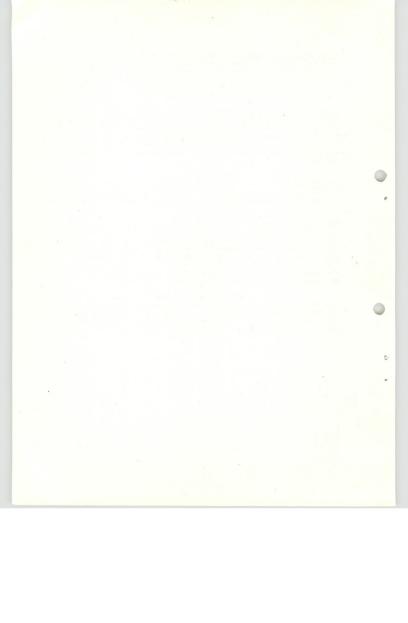
UPPER YELLOWSTONE RIVER: The snow pack in Yellowstone Park on May lst is good for this time of year, although not as high in percentage of average as snow survey courses further west in the Misscori Basin. The stream flow at Corwin Springs for April-September was raised approximately 300,000 acre feet. It is now anticipated that approximately 2,000,000 acre feet will pass that station between April 1st and September 30th.

LOWER YELLOWSFORE RIVER (In myoming): The snow mack on the Popo Agie River on Arril 1st was slightly below average, and it is anticioated that there will be an early runoff of rather a smell volume. The forecasts for the Popo Agie are approximately the same as April 1st, due to a plus decerture from normal of precipitation over most of the basin. It is articipated that above normal precipitation during May and June will produce about normal runoff conditions.

WIND RIVER. May lst snow surveys made on the dind River Resin above Dubois indicate a fair water surrly during april-September from this stream. Revised forecasts would indicate approximately 10% of average flow at Riverton.

COLUMBIA RIVER BASIM: The 1953 snow pack as measured on May lat in the Flathead Basin has increased at some stations, while the snow line has raised in elevation. The basin now contains a good water supply, and with normal May and June temmeratures and precipitation; should yield approximately 6,189,000 acre feet of water from April 1st through Sevtember, or 110% of average. Although the snow line on the South Pork of the Flathead is relatively high, it is anticipated that 2,285,000 acre feet of water will be available to Hungry Horse Dam between April 1st and September 30th, or 110% average.

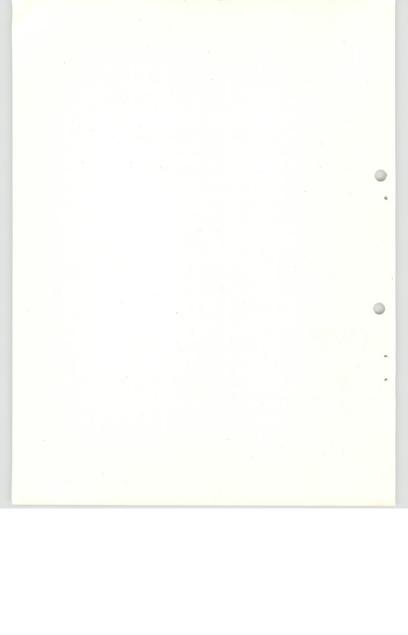
The Clark's Fork drainage received an above average precipitation during April, and the river forecasts were raised slightly to meet this condition. It is now anticipated that the Clark's Fork below Missoula will flow approximately 110% of average, and the combined rivers at Plains will flow approximately 113% of average during the April-September period.



Mar 1, 1953 FORECAST OF SEASONAL STREAM FLOW

	: Seasonal Str				
UPPER MISSOURI RIVER	FORECAST-1953		!'easured		
I. POTTANA	April - Sept.	10-Yr	April -	Sept.	Avg.A-S
	1 7	Avg.	1952	1951	1/1-150
RED ROCK RIVER					
Kenedy Ranch (et)	71.1	120	_	_	62
Monids (near) (1)	95.9	112	_	_	63
BEAVERUEAD RIVER	120				
Barratts, Montana	193	97	222	170	198
BIGHOLE RIVER		1			
Nelrose (near)	789	101	-	861	751
JEFFERSC: RIVER					
Sappington (at)	984	86	-	1.1/1	1,134
LADISC' RIVER					
West Yellowstone (near)	195	98	21.8	23/1	199
Caryling (near) (2)	412	98	-	-	419
NcAllister (near) (3)	763	104	-	-	733
GALIATI" BIVER					
Gateway (near)	435	96	596	399	454
Hyalite Creek	33.6	92	1,1.0	27.	7 36.7
Logan (st)	1,55	93	7/15	412	401
MISSO RI RIVER		1			
Tos ton (at)	2,208	90	2,825	2,217	2,450
Fort Benton (at)	3,298	94	-	4,072	
Lona	3,810	91	-	5,162	4,201
Zertmen	1,090	90	-	5,524	1,56h
SILL SIVES					
Veughn (at) (5)	366	- 93	-	-	ls 11
"ATTE RIFER					
Shellow (et)	111	61	-	-	755
Brinkes (near)	J:15	81	-	-	51.2
JUDITU RIVER					
I't' is (near)	31;	77	1,8	40	114
"FILL STOY'S RIVER					l
Corrin Springs (at)	2,000		2,184		1,858
Livingston (near)	2,319	107	-		2,166
Billings (et)	3,965	95	4,642	4, 6,	
Files City (at)	6,617	. 97	6,264	7,237	6,774
Sione y (near)	6,941	97	-	7,065	7,006
SHIELDS RIVER					
Wilsall (near)	1,3.2	98		32	.3 11:
CLARK FORK RIVER		.			
Chance (at)	520	83	1	731	
Edgar (at)	55€	88	613	766	650

(1) Observed flow plus change in storage in Lima Reservoir
(2) Observed flow plus change in storage in Mebgen Lake
(5) Observed flow plus change in storage in Mebgen and Bruis Lakes
(6) Observed flow plus change in storage in Gibson, Willow Greek & Pishkun Res.
(*) Preliminary data furnished by U.S. Geological Survey, subject to revision.



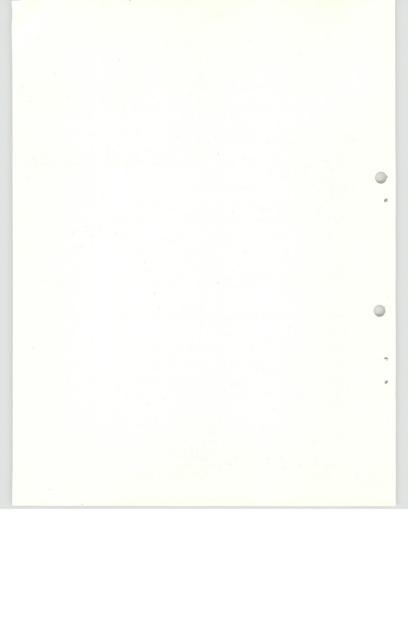
May 1, 1953

FORECAST OF SEASOMAL STREAM FLOW

	Seasonal St				cre fee
YELLOWSTONE RIVER TRIBUTARIES	FORECAST-1953				10-Yr.
IN WYOMING	April - Sept.	10-Yr.	April	- Sept.	Avg.A-S
		Avg.	1952	1951	141-150
WIND RIVER					
Riverton (at) (6)	6110	110	-	_	534
BIG HORN RIVER					7,7-
Thermopolis, (at) (7)	960	95	_	_	1,011
Kane, (at)	1,394	94	_	1,514	1,475
St. Kavier (near) (8)	2,192	98		2,365	2,232
BULL LAKE CREEK					
Bull Lake (Above)	171	85		-	202
Lenor (near) (9)	159	83		_	192
POPO AGIE RIVER					
Riverton (near)	369	98		-	375
NORTH FORK POPO AGIE RIVER					
Lander (near)	72	96		87	75
LITTLE POPO AGIE RIVER					
Hudson (at)	57	100	-	-	57
GREYBULL RIVER					
Meeteetse (at)	208	87		-	238
Basin (near)	99	85		-	122
SHOSHONE RIVER					
Buffalo Bill Dam (below) (10)	811	103		862	785
Byron (at) (10)	674	112		691	601
TONGUE RIVER					
Dayton (near)	111	97		108	114
Acme (near)	265	106		206	250
Decker (near) Montana (11)	271	98		210	276
POWDER RIVER					
Arvado (at)	163	98		59	165
Moorehead (at)Montana	298	95		117	313
Locate (at) Montana	366	94		150	390
MIDDLE FORK POWDER RIVER					
Kaycee (near)	73	90		50.	81
NORTH FORK POWDER RIVER		- 01			00
Mayoworth (near)	18.8	94		12	20
CLEAR CREEK	70.0	0.00		0/	1,0
Buffalo (near)	38.9	97		26	
Arvado (near)	119	90		53 .1	132

⁽⁶⁾ Observed flow plus Storage in Bull Lake and Pilot Butte Reservoirs

⁽⁶⁾ Observed flow plus Storage in Buil Lake and flot Butte Reservoirs
(7) Observed flow plus Storage in Boysen Reservoir
(8) Observed flow plus Storage in Boysen and Buffalo Bill Reservoirs
(9) Observed flow plus Storage in Bull Lake Reservoir
(10) Observed flow plus Storage in Buffalo Bill Reservoir
(11) Observed flow plus Storage in Tongue Reservoir
(*) Freliminary data furnished by U.S. Geological Survey subject to revision.



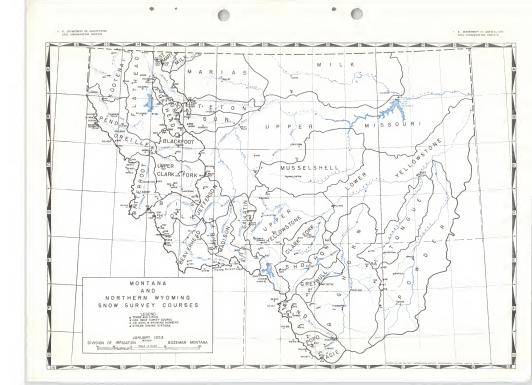
May 1, 1953

FORECAST OF SEASONAL STREAM FLOW

	Seas	onal Stre	emflow	in Thou	sends of a	ere feet
UPPER COLUMBIA RIVER	FORECA	ST 1953	% A-S	Measur	ed runoff	10-Yr.
IN MONTANA	April-	April-	10-Yr.	April	- Sept.*	' Avg.A-S
	Sept.	July	Avg.	1952	1951	141-150
		i i				
CLARK FORK RIVER						
Bonner (above) (3)	896	810	115	-	941	781
Missoula (above)	1780	1619	109	1782	2369	1631
Missoula (below)	3363	3087	110	3268	4127	3044
St. Regis (at)	4486	4146	111	4318	5492	4042
Plains (near) (4)	12314	11341	113	9421	13302	10869
Cabinet Gorge (at) (4)	13822	12734	113	-	15178	12297
BLACKFOOT RIVER						
Bonner (near)	884	806	104	-	1295	851
BITTERROOT RIVER						
Darby (near)	609	571	110	608	663	544
At Mouth (6)	1583	-	112	1362	1618	1413
FLATHEAD RIVER						
Columbia Falls (near) No. Fk.	1754	1606	103	-	2396	1705
Columbia Falls (at) (7)	6189	5583	, 110	7224	5722	5 604
Polson (near) (4)	7441	6843	112	4993	6363	6621
MIDDLEFORK FLATHEAD RIVER						
West Glacier (near)	1813	1697	108	-	2138	1664
SOUTH FORK FLATHEAD RIVER						
Columbia Falls (near)(7)	2295	2150	110	2058	2511	2091

(3) Difference in observed flow, Clark Fork above Missoula and Blackfoot at Bonner.
(4) Observed flow plus change in storage in Flathead Lake and Hungry Horse Res.
(6) Difference in observed flow, Clark Fork above and below Missoula.
(7) Observed flow plus change in storage in Hungry Horse Reservoir.
(*) Preliminary data furnished by U.S. Geological Survey, subject to correction.



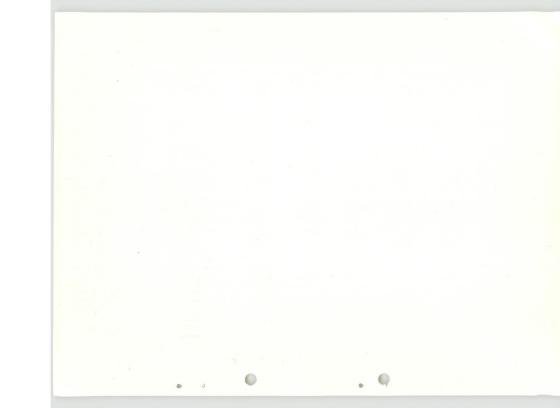


INDEX TO MONTANA & NORTHERN WYOMING SNOW COURSES

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(SOCK-STATISTICAL)			741.4 6.4						BIO NORM COACH MAN				- amili	.106	CON		
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Bloody Dick Cold Stone Lemin Pens Terrell Creek Trail Creek Salway Junction	15010 T309 1310 13012 1342 13611	7600 8100 7480 6650 7090 6800	12 11 9 14 15 27	65 65 106 95 106 68	16W 16W 15W 15W 15W	1948 1948 1948 1948 1948	3,4 1,4 3,4 3,4 3,4 3,4	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	(SIGSHONE IGVIZ) dy East Ontrance Sylvan Pass TONIES RIFF dyond	10% 10%	1000 7100	17	528 528	109W 116W	1948 1936	1,2,3,4,5 1,2,3,4,5	5
(MDS NOLE) Fig Sole Pess Fig Sole Pess (Beld East Brundary Ofbboos Pass Jahner Creek Riner Ferks Hiner Lake	1303 *)1306 1305 1306 1306	7640 6900 6700 7100	28 25 22 4	33 35 33 23 73 63	189 189 179 199 169 179 169	1918 1918 1918 1934 1948	3,4 3,4 3,4 3,5 1,7,5,4,5 3,6	1 1 1 1 1 2	Hig Goose Burgess Ranger Sta. Dome Labe Lodgepole PONION NIVER		7700 7900 8900 8210	36 11 32	538 568 538 568	864 899 879 1064	19\5 1950 1950 1940	2,3,4,3 2,3,4,5 2,3,4,5 4,5 4,5	1 12 12 1
(MINE MINE)	1306	7340 7300 6720	25 25 26 10	63	17W 16W	1948	3,6 3,6,5	1	Borth Powder Yuddy Pass Noldier Park Sour Ore ab Red Fork	758 767 756 611 751	8500 9700 8700 8500	5 11 36 17 18	478 538 538 498	85W 85W 85W 84W 84W	1951 1950 1950 1936 1936	2,3,4,5 2,3,4,5 2,3,4,5 2,3,4,5 2,3,4,5	12 1 12 1
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Cotterwood Cotterwood (Opper) Flashlight Tobacco Root Wigilants	1182 1181 1203 1202 1101	5900 84,00 6950 6900 6125	26 30 22 13	108 105 89 45 99	39 29 29 39	1948 1948 1945 1948	3,4 3,4 3,6,5 3,6,5		SCOTTONAL HIER	(OLUM	ABIA	RIVE	R B	ASIN		
MADISCH HITEE Hebgan West Tellowstone Norris Sesin	1185 1187 1082	6550 6700 7500	22 44 14 14 14	115 138	38	1934 1934 1935	1,2,3,4,5 1,2,3,4,5 3,4		Sares Yountain Size Bird Jasin Red Mountain	1581 1181 1581	6000 6800 6000	1 24 4	25M 37W 36N	33.W 26W 29W	1937 1937 1937	4,5 4,5 3,4,5	1 1 1
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Her World ZI-MILE MISSOURI RIFER MAIN Cheeman Heesevoir Crystal Lake Granshopper Kings #211 Picnic Groends Fipastone Paus Heesle Paus Heesle Paus Tem Hile Creek, Low Tem Hile Creek, Uppe Tem Hile Creek, Uppe	11.55 2594	6700 7150 6200 6100 7000 7950 6500 7200 6900 6250 6800	24 1 24 19 35 35 32 11 16 13 19	35 115 8N 12N 9N 13N 5N 13N 8N 8N 8N 8N 8N 8N 8N 8N 8N 8N 8N 8N 8N	58 57 171 86 78 78 68 68 58	1939 1936 1936 1941 1938 1936 1936 1935 1931 1935	1,2,3,4,5 1,2,3,4,5 1,4,3,4 3,4,5 2,3,4,5 2,3,4,5 3,4,5		Heil Moharing Ulvide Holbrowk Kishemsho Limestone Pass Lagen Creek Karian Pass Stew Leb. P15. Stew Leb. P15. Stewart P1 Lake Printers Lake Printers Lake Creek Lake 62 Upper Helland Lake Puts Creeks Daintocken Counts Nil	1303 1303 1442 1300 1345 1345 1345 1345 1362 1362 1362 1361 1361	5770 4530 4300 2000 4300 5250 5250 7000 6500 6500 3600	25 18 7 28 34 34 15 23 11 9 21	21 N 578 189 309 308 258 258 258 258	13H 21H 12H 21H 14H 14H 15H 15H 17H 17H 16H	1942 1951 1946 1948 1937 1946 1948 1948 1948 1948 1948 1948 1951	3,4,3 1,2,3,1,3 3,4,5 3,4,5 1,2,3,4,5 1,2,3,4,5 3,4,5 3,4,5 3,4,5 3,4,5 3,4,5 3,4,5 3,4,5 3,4,5 3,4,5 1,2,3,4,5 1,2,3,4,5	1 2 2 1 1 1 1
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Bench Mark Cabdin Creek 5-Bull Gatee Fark Goat Mountain My Lake Krong Creek Ridge Krong Creek	1286 1286 1289 1289 1287 1389 1287 1389	5500 SL00 5600 5300 7000 7300 6800 5700	9 33 36 31 20 21 17	20K 23N 20M 2LN 22K 23N 25N 25N	10W 10W 10W 10W 10W 10W 10W 10W 10W	1948 1949 1948 1949 1934 1950 1949 1949	3,4 3,4 3,4 3,4 3,6 3,6 3,6 3,6		Ontstocken Coyste Nil Si Dorade Nine Coyste Nil Si Dorade Nine Coid Greek Lake Intergeard Lubrecht Forest North Firek Jacko Fiteds Grinde Fiteds Grinde Fiteds Grinde Fiteds Grinde Fiteds Grinde Fiteds Grinde Studdare Cross Stepil Pes Storn Lake No. 2 Start Holl Studial Grinde FIED OREILL HTTE	1302 1305 1301 1301 1306 1301	52,00 053: 6500 7800 1300 7100 6500 6900 7780 6500 71,00	31 3 22 11 11 26 9 16 19 19 6	108 58 138 58 58 158	12m 12m 13m 15m 17m 6m 7m 15m 15m 15m 15m 15m 15m 15m	1937 1939 1934 1939 1939 1936	2,5,4 3,1,3 2,3,4 2,5,4 6	130151
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LONG THIS INCOME. (FULL THEFF MYSHING THE STATE OF THE S	10P2 9F6 9F30 9F9 9F3 9F3 9C2 9F1 9C3 9F11 9F11 9F3 9C3 10F1	9200 8900 10000 9500 8500 10000 9500 9500 9500 9500 9500 8500 8500	22 23 25 1 5 29	23 23 28 28 18 13 23 23 448	1000 1000 3M 1000 3M 1000 3M 1000 4M 1000 2M 110W	1940 1948 1948 1948 1940 1939 1940 1940 1948 1936	4,3,4,5 2,3,4,5 2,3,4,5 2,3,4,5 2,3,4,5 2,3,6,5 2,3,6,5 2,3,6,5 2,3,6,5 2,3,4,5 2,3,4,5		e. Numerals 1,2,5,6 b. Numerals refer to 1. U.S 2. U.S 5. Meer L. U.S 5. Fat: 6. See	o Agensy . Forest . Osologitions Powe . Indian ional Pur	Sarvine eal Surv r Compan Sarvine k Servin riment S	west) wy end y ention	O.S. En	az vey e	m follow		4 Fey 1
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STORAGE IM RESERVOIRS OF MONTAWA - May 1, 1953 MISSOURI RIVER BASIN - MCM TAWA

RESERVO IR	Location on or	Usable		Reservoir	Volumes in ,	1,000's a.f.	
	liversion from	Capacity	1953	1952	1951	1950	10-yr. average 1943 - 1952
Lima Reservoir	Beaverhead	81,00		62.L5	72.02	69.54	67.03
Ruby Reservoir	Ruby River	38.85					
Willow Creek Reser.	Willow Creek	17.76					
Hebgen Lake	Madison River	345.00	203.3	205.2	261.3	231.4	220.5
Ennis Lake	Madison River	41.00	33.39	38.35	29.89	32.78	35.03
Middle Creek Reser.	Hyalite Creek		5.48				
Lake Sewall	Missouri River		80.52	26.42	20.147	12.24	26.19
Hauser Lake	Missouri River	62.50	51.87	31.64	52.93	36.73	43.13
Lake Helena	Missouri River	10.45	6.86	2.24	7.20	2.70	6.81
Holter Lake	Missouri River	81.92	36.61	57.80	56.51	68.03	57.78
Gibson Reservoir	N.Fk. Sun River	105.00	73.89	92.57	81.71	52.51	73.22
Willow Creek Res.	N.Fk. Sun River	32.30	28.18	26.82	27.09	5.89	18.28
Pishkun Reservoir	N.Fk. Sun River	32.00	19.94	23.48	19.04	21,.66	20.46
Bynum Reservoir	Teton River						
Lower Two Medicine Lake	Two Medicine River	- 14.00		0	0	0	2.10
Four Horns Lake	Badger Creek	20.00		7.66	8.58	6.36	8.08
Swift Reservoir	Birch Creek	30.00	21.98	30.19	30.20	21,.89	28.01
Lake Francis	Dupuyer & Birch Cr.		101.40	98.80	102.20	91.112	102.20
Ackley Lake	Judith River	5.82		4.87	4.81	4.36	4.80
Durand Reservoir	N.Fk.Musselshell	7.01	5.17		7.03	7.03	1
Martinsdale Reservoir	S.Fk.Musselshell	23.10	12.68		14.23	13.73	1
Deadman Basin "	Musselshell River	52.50				52.00	
Fort Peck Reservoir	Missouri River	19,000.00	12,630.0	13,630.0	13,400.0	12,540.0	12,512.0
Fresno Reservoir	Milk River	127.20	97.49	1/18.50	132.50	60.94	96.98
Nelson Reservoir	Milk River	66.80	36.66	40.28	18.49	13.40	31.84
Mystic Lake	W.Rosebud Creek	20.80	4.84	2.87	1.21	0.579	3.34
Cooney Reservoir	Red Lodge Creek	27.50		18.34	16.51	18.98	13.71
Tongue River Reser.	Tongue River	73.90	22.14	30.11	14.98	15.10	17.31
Sherburne Lake	Swiftcurrent Cr.	66.10			39.94	311.08	
		YELLOWSTO:	E RIVER BA	SIN - Wyomin	o		
Buffalo Bill Reservoir	Shoshone River	1,56,60		233.7	236.2	164.3	278.6
Boysen Reservoir	Wind River	819.80		233.4			
Pilot Butte Reservoir	Wind River	30.10		19.1	21.0	19.9	205.6
Bull Lake Reservoir	Wind River (Bull Creek)	155.00		33.9	71.5	6.8	51.6



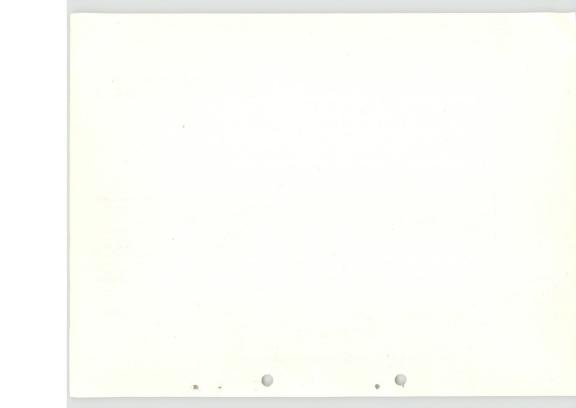
STORAGE IN RESERVOIRS OF MONTANA - May 1, 1953

COLUMBIA RIVER BASIN

DEGERATO		** 1 **	Res	servoir Volu	mes in 1,000	's a.f.	
RESERVOIR	Location on or diversion from	Usable Capacity	1953	1952	1951	1950	10-yr. average 1943 - 1952
Georgetown Lake E.Fk. Creek Res. Nevada Creek Res.	Flint Creek E.Fk.Rock Creek Neveda Creek	31.00 16.04 12.60	23.80	21.58	21.41	19.d ₊	21.68
V.Fk.Bitterroot Res. Como Lake Hungry Horse Res.	W.Fk. Bitterroot Rock Creek So.Fk.Flathead Riv.	31.70 34.80 3,500.00	898 . L.	216.7	20.50	19.00	
Flathead Lake Little Bitterroot Dry Fork Reservoir Mission Valley Res.	Flathead River Little Bitterroot* Dry Fork Creek* Flathead Irr.Proj.**	1,791.00 36.10 6.70 98.60	777•9 31.64 5•58 43.14	1212.0 36.12 6.l ₁ 1 67.17	990.6 32.56 5.82 58.8L	829.3 36.12 6.02 32.66	991.9 21.77 48.00 48.94
Lower Jocko Lake	Jocko Creek	7.6	0.245	2.58	50.001	26,00	140.944

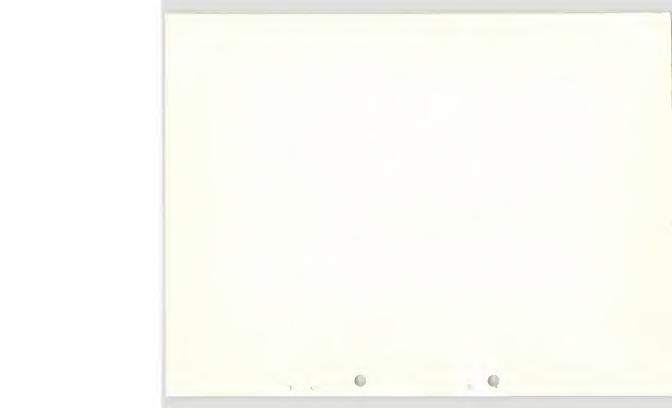
^{*} Sum of two reservoirs on Little Bitterroot

^{*} Sum of two reservoirs on Dry Fork Creek ** Sum of (8) eight reservoirs on Project



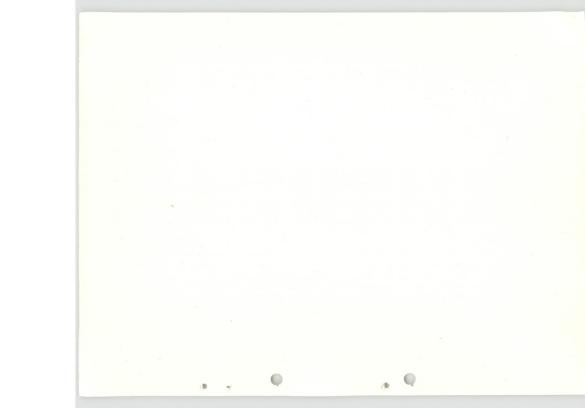
PRECIPITATION DATA FOR APRIL 30, 1953 MONTANA

			1952			1953						
Station	Elev-		nt Prec	ipitatio					Dept.		ted Pred	ipitation
	ation	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	from Normal	1952-53	Normal	Departure
WEST OF DIVIDE												
Fortine Butte (Airport) Phillipsburg Hamilton West Glacier Summit (Narias) Ovando 1 S% Trout Creek Thompson Falls Average (9)	3000 5533 5280 3529 315l ₄ 5213 l ₄ 101 2l ₄ 85 2l ₄ 35	.05 .06 T .11 .08 .75 .13 .26 .13	.28 .75 1.07 .64 .86 1.63 .65 .37 .38 .72	.87 .21, .28 .27 2.13 3.12 1.16 3.12 1.03 1.12	2.96 .73 1.27 1.60 7.07 14.00 3.02 13.14 7.30 5.68	.71 1.03 .94 .35 3.24 4.50 1.40 3.29 1.96 1.93	0.90 0.45 0.56 0.42 1.62 3.20 0.24 1.37 0.48 1.03	2.29 1.36 0.91 0.21 3.19 5.78 0.62 2.76 2.05 2.37	+1.30 +0.30 -0.31 -0.66 +1.69 +3.50 -0.33 +1.08 +0.61 +1.03	8.06 3.99 5.03 3.60 18.30 32.98 7.22 2h.61 13.33 13.01	8.99 4.19 6.28 5.53 16.61 19.82 9.66 21.45 13.01 12.50	93 20 -1.25 -1.93 +1.69 +13.16 -2.44 +5.16 -0.32 +0.51
CENTRAL DIVISION Babb Havre Great Falls(Airport) Helenn (Airport) Lewistown (Airport) Livingston Wisdom West Yellowstone hystic Lake Average (9)	14300 21488 36644 3893 14132 14185 6058 6669 6558	.14 .01 .16 .35 .37 .18 .13 .13 .19	.96 .42 1.36 1.05 .65 .52 .35 .68 1.48	.08 .12 .08 .28 .08 .18 .43 2.23 .47	2.24 .26 .55 .51 .14 .50 1.46 2.20 1.60	1.53 .58 1.46 1.02 .79 .77 1.19 2.05 2.04 1.38	1.52 0.15 0.74 0.22 0.31 0.56 0.51 1.65 1.31	3.56 1.53 1.85 0.83 1.36 1.63 0.94 h.28 1.98	+1.9/1 +0.5/1 +0.5/1 +0.70 -0.29 +0.09 +0.51 +0.52 -0.90 +1.5/1 +0.52	10.87 3.37 6.20 h.26 h.00 l.5h 6.29 9.86 11.h0 6.75	7.64 4.62 5.38 4.39 4.57 5.83 5.67 14.56 11.47 7.12	+3.23 -1.25 +0.82 -0.13 -0.57 -1.29 +0.72 -1.70 -0.07 -0.37
EASTERN DIVISION Malta Ft. Feck Medicine Lake Circle Billings #2 Miles City Glendive Broadus Average (8)	2255 2180 1962 21,28 3139 2392 2076 3026	.01 T .11 .03 .47 .01 .02	.18 04 .10 .17 .32 .61 .58 T	.26 .11 .08 T .15 .11 .05 .06	.50 .21 .70 .11 .36 .70 .17 .85	.52 .67 .07 .25 .47 .48 .36 .53	0.73 0.28 0.11 0.23 0.15 0.68 0.66 0.12	2.09 1.54 1.73 1.59 0.93 2.52 2.28 1.91	+1.29 +0.46 +0.84 +0.845 -0.37 +1.40 +1.16 +0.38 +0.22	4.29 2.85 2.93 3.61 3.17 5.11 4.12 3.81 3.74	3.78 3.73 3.29 5.59 5.74 5.23 4.71 5.29	+0.51 -0.88 -0.36 -1.98 -2.57 -0.12 -0.59 -1.48 -0.93



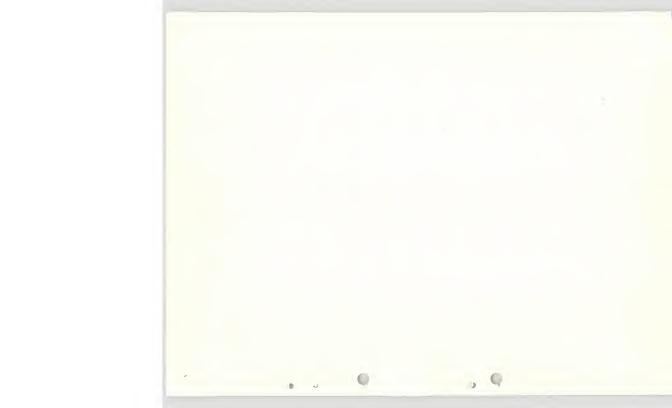
PRECIPITATION DATA FOR April 30, 1953
NORTHERN WYOMING

			1952			1953						
	Elev-	Cu	rent P	cecipits	tion				Dept.	Accum	lated Pre	cipitation
Stati on	ation	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	from Normal	1952 - 53	Normal	Departur
BIG HORN RIVER BASIN												
Cody Lovel1 Worland Sunshine 1 SW Thermopolis Riverton Dubois Average	4984 3825 4061 6930 4336 4954 6917	.03 .00 .00 .36 .02 .16 .03	.21 .19 .16 1.94 .30 .14 .39	.02 .11 .08 .18 .06 .06 .141	.14 .12 .28 .54 .80 .56 .42	•97 •18 •40 •52 •72 •12 •13	0.18 0.30 0.40 0.45 0.52 0.23 0.37 0.35	2.79 0.54 1.53 2.37 2.55 1.89 1.66	-0.06 +0.53 -0.09 +0.53 +0.59 +0.61	1.44 2.85 7.68 4.97	3.72 2.84 3.35 7.75 5.88 4.03 1.06 14.67	+0.62 -1.40 -0.50 -0.07 -0.91 -0.57 -0.65 -0.45
TONGUE RIVER BASIN Sheridan	L ₁ 021	.22	•27	•50	1.14	1.53	0.77	1.53	-0.39	5.96	6.97	-1.01
Arvada Metz Ranch Gillette Nine Mile Creek Mid-West Average	3680 5280 4542 5000 4850	.19 .02 .18 .10 .10	.19 .04 .70 .40 1.02	.65 .23 .86 .27 .12	.69 .40 .62 1.13 .74 .61	•53 •91 •94 •94 2.78	0.28 0.27 T 0.56 0.23	1.18 1.16 2.40 1.58 2.01 1.67	-0.43 +0.65	3.03	4.62 5.05 6.21 4.98 6.09 5.39	-0.91 -2.02 -0.51 0.00 -0.91 -0.51



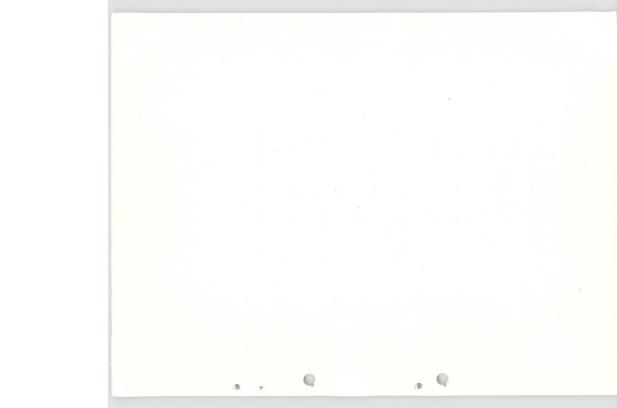
MONTANA SNOW SURVEYS May 1, 1953

	No.	Elev.	Date	Snow	1		Wate	r Conte	nt (Ir	ches)		Y
Drainage Basin & Snow Course *			of Survey	Depth (In.)	May 1	1	Past Re	cords			ge Data y 1	8
			1953	1953	1953	1952	1951	1950	1949	Avg.	% Avg.	I
JEFFERSON RIVER												
(Rock-Beaverhead) Lakeview Ridge Lakeview Canyon	11E3 11E4	7400 6930	L ₁ /30 L ₄ /30	23 34	7.6 11.7	10.6 17.9	4.9	-	2.1,	5.9 9.4	129 124	57.57
(Wise River) Elk Horn	13D15	8450	5/1	31	10.2	3.8	-	10.7	5•5	5.5	186	1
MADISON RIVER												
Hebgen West Yellowstone 21-Mile *Big Springs	11E5 11E7 11E6 11E9	6550 6700 7150 6500	4/28 4/28 4/29	16 11, 36	6.2 5.8 12.5	7.2 6.8 16.1	0 5.1 12.5	8.4 10.0 18.8		3.7	222 157 118	200
GALLATIN RIVER												
Devil's Slide Hood Meadow 21-Mile	10D4 10D3 11E6	8100 6600 7150	5/2 5/2 4/29	63 16 36	23.3 5.2 12.5	25.6 2.5 16.1	18.7 5.5 12.5	8.5	20.3 1.7 12.6	4.2	109 124 118	1



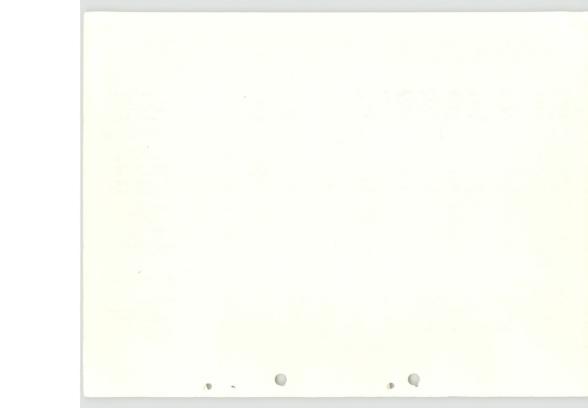
MONTANA THOY SURVEYS May 1, 1953

	No.	Elev.	Date	Snow			Wate	r Cont	ent (Ir	ches)	
Drainage Basin & Snow Course *			of Survey	Depth (In.)	May 1		Pest B				ge Data ay 1
			1953	1953	1953	1952	1951	1950	1949	Avg	%Avg.
MISSO RI PIVER MAIN STEM										400	
Chessman heservoir Kings Hill Pipestone Pass Stemple Pass Tenmile, Lower Tenmile, Widdle Tenmile, Upper	1205 1001 1201 1201 1202 1203 1204	6200 7950 7200 6900 6250 6800 8000	4/20 4/29 5/1 4/30 5/2 5/2	12 37 24 31 18 35	3.5 12.14 6.1 8.8 5.14 11.8 16.2	00 9.8 0.3 4.2 00 1.7 5.9	3.0 12.8 6.3 11.2 5.1 11.2 11.8	7.8 19.6 3.2 14.2 8.9 16.3 18.8	00 12.8 1.0 6.3 0.2 3.5 7.1	1.6 11.6 2.0 5.9 2.0 6.3 10.2	219 107 306 1149 270 187 159
(Marias River) Marias Pass UPPER YELLOWSTONE	1285	5250	4/30	L15	17.4	10.5	19.7	26.3	12.1	9.9	176
Canyon Cooke City Leke Camp Lodgepole, Wyoming Lupine	10E3 10D7 10E4 9E1 10E1	7750 7400 7850 8200 7300	5/1 5/1 5/1 5/1 5/1	37 17 20 31 26	13.9 5.4 6.5 11.3 9.0	13.3 3.2 7.9 6.9 0.0	17.3 6.2 6.2 14.8	9.7 6.1 11.9 -	10.8 3.6 7.6 9.9	11.6 4.9 7.8 8.6 3.6	120 110 83 132 250



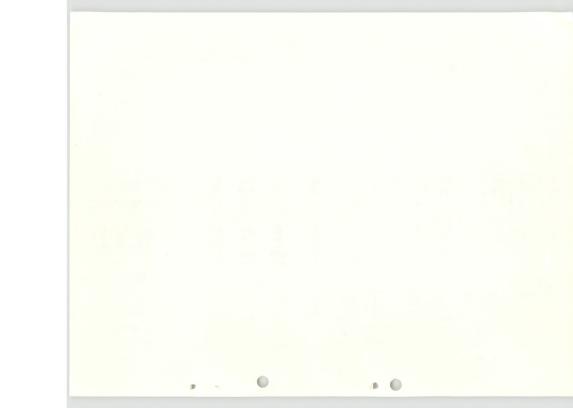
MONTANA SNOW SURVEYS May 1, 1953

MISSOURI BASIN											
Drainage Basin & Snow Course *	No.	Elev.	Date of Survey	Snow Depth (In.)	May 1		Past R	ecords		Aver	age Data
			1953	1953	1953	1952	1951	1950	1949	Avg.	%Avg.
LOWER YELLOWSTONE (Wind River - above Div.	Dam)										
Brooks Lake #3 Burroughs Creek Du Noir Geyser Creek Little Warm Sheriden T-Cross Rench	10F2 9F6 9F2 9F3 9F4 9F1	9200 8800 8750 8500 9500 7500 8000	L1/26 L1/27 L1/28 L1/27 L1/27 L1/26 L1/27	64 40 19 17 49 14	28.6 17.0 6.3 5.8 19.0 5.8 5.5	29.1 10.1 ₄ 2.5 2.3 17.8 00 5.3	34.2 25.3 11.6 10.3 28.1 6.0 7.7	34.2 17.7 11.7 7.8 26.2 5.0 6.2	25.5 11.2 2.1 00 17.3 00	25.3 16.2 6.9 5.1 22.4 1.9 3.6	113 105 91 114 85 305 153
Dinwoodie Dry Creek Hobbs Park Mosquito Park St. Lawrence Trowt Creek	9F10 9F9 9G2 9G3 9F11 9G1	10000 9500 10000 9500 9000 6400	4/25 4/25 5/2 5/2 4/30 5/2	144 30 47 30 17 21	14.9 9.4 11.9 7.7 5.1 4.7	14.5 5.9 26.8 12.9 9.3 8.5	18.6 11.5 25.8 8.1 6.9	17.2 10.6 30.3 12.7 10.3 1.5	10.6 3.9 21.3 5.4 4.8 00	15.2 8.0 26.0 7.0 7.8 2.5	98 104 46 110 65 188
POPO AGIE RIVER											
Blue Ridge Grannier Meadows Sawmill Glade South Pass	8G2 8G4 8G1 8G3	9 500 9000 8500 9000	5/1 5/1 5/1 5/1	34 31 18 33	9.3 9.7 5.6 10.2	20.5 20.1 11.6 20.7	12.6 12.0 7.3 15.8	18.4 23.1 7.6 25.3	10.8 13.2 2.1 14.3	12.6 14.0 7.2 14.8	74 69 78 69



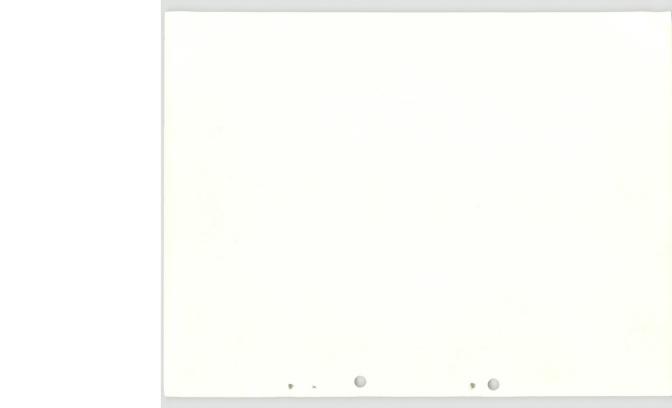
MONTANA ST CW SURVEYS May 1, 1953

	No.	Elev.	Date	Snow			Water	Conte	nt (In	ches)	
Drainage Basin & Snow Course *			of Survey	Depth (In.)	May 1	P	ast Re	cords			ge Data
			1953	1953	1953	1952	1951	1950	1949	Avg.	%Avg.
IG HORN RIVER (Wyoming)						ì					
Beavers Mill Owl Creek	9F8 8F1	8000 8700	4/26 4/25	41	11.3 10.1	5.7 6.9	6.8	8.0	14.8	6.3	227 149
Ranger Creek Tensleep R.S. Wood River	7E1 7E3 9E7	8800 8200 8000	5/1 5/2 5/1	28 23 13	7•3 5•8 3•5	5.2 3.8 1.1	5.5 5.4	8.4	1.5	4.4	114 131 88
			-,								
POWDER RIVER										1	
Sour Dough Muddy Pass	6E1 7E7	8500 9700	5/4 5/4	24 30	6.7 10.0	2.2	4.9	6.0	0.0	5.0	134 125



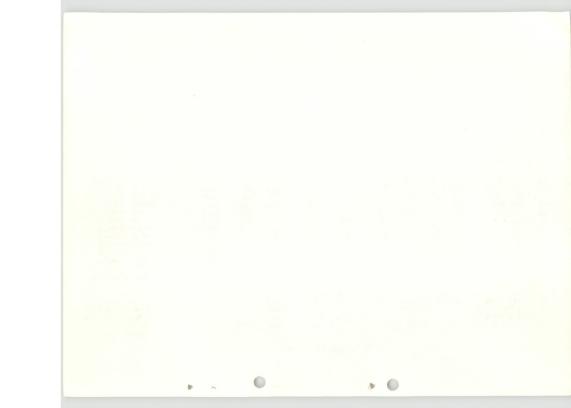
MOTTALA SHOW SURVEYS May 1, 1953

	No.	Elev.	Date	Snow			77/8	ter Co	ntent (Inches)		_
Drainage Basin & Snow Course			of Survey	Depth May							ge Data	à,
				(In.)	1	Pest Records			May 1			
			1953	1953	1953	1952	1951	1950	1949	Avg.	Avg.	+
FLATHEAD RIVER							-					
Blue Bird	14A1	6800	4/30	105	1,5.5	34.9	41.4	53.7	36.7	36.1	129	
Basin Creek	13B1/4	5000	1/26	00	00	00	2.1	-	-	-	-	-
Big Creek	13B3	6750	14/30	107	45.9	1,2.1	148.0	60.0	-	1,3.1	106	
Brush Creek	1/1A/4	5000	1,/30	27	10.3	2.3	3.6	17.1	-	5.3	179	-
Cattle Queen	13A1	1700										-
Covote Hill	13B11	4200	5/1	3	3.7	00	-	-	-	-		
Desert ! fountain	13A2	5600	5/2	36	13.3	7.9	14.8	21.7	10.8	10,1	131	
Hell Roaring Div.	1/1A3	5700	5/1	69	30.2	25.3	21.0	37.1	26.7	26.7	11/1	
Holbrook	14B13	1.530	1/50	00	00	00	1.4	-	-	-	-	
Logan Creek	14A5	4300	1/30	5	1.6	. 00	1.0	7.1	_	1.1	149	-
Farias Pass	13A5	5250	11/30	1.5	$17.l_{t}$	10.5	19.7	26.3	12.1	9.9	180	-
with Fork Jacko	1387	6330	5/1	97	12.9	35.1	13.4	59.6	-	35.6	118	1
Quintonkon	13A13	3800	5/2	9	3.5	11.1	14.6	-	-	-	-	
Rainy Lake	13B6	4300	5/1	Under	water	. 00	00	10.2	T	-	-	ŀ
Spotted Bear Mt.	13B2	7000	11/28	20	6.9	-	6.8	18.1	-	-	-	1
Strawberry Lake	13810	6500	4/30	96	1,0.5	39.7	27.9	58.8	35.4	40.1	100	ı
Trinkus Lake	13B1	6500	4/30	88	37.9	1.0.6	32.9	53.1	36.5	40.8	100	1
Trout Lake	13 A 12	3600	4/29	22	7.4	4.3	-	20.2	-	11.7	63	
Twin Creeks	13811	3580	4/29	00	00	20	00	-	-	-	-	1
Uppe r Holland Lake	13B5	7000	5/6	83	3/1.1	34.0	33.5	-	-	33.9	103	1
PEND ORIELLE												1
Baree Mt.	13B1	6000	5/1	101	42.2	37.6	40.4	68.1	51.1	39.8	106	



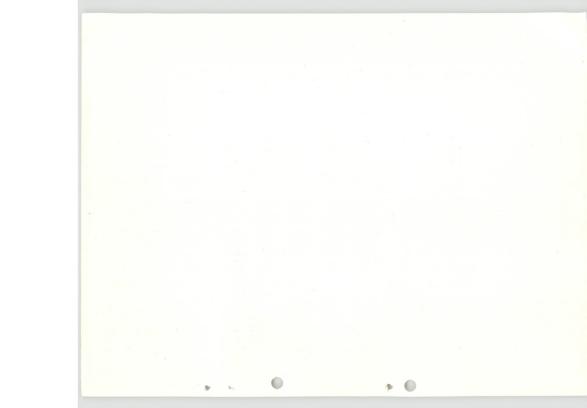
MONTANA SNOW STRVEYS May 1, 1953

CCLUPPIA PASIN	No.	Elev.	Date	Snow			Vet	er Cen	tent (In	nches)		
Drainage Besin & Snow Course *			of Survey 1953	Depth (In.) 1953	May 1 1953	Past Records				Average Data		
						1952	1951	1950	1949	Avg.	%Avg.	
UPPER CLARK FORK						Andrew - Address						
Coyote 4ill	13811	1:200	5/1	8	3.7	00	-	-	-	~	-	
Chessman Reserveir	12 C 5	6200	1/30	12	3.5	00	3.0	7.8	00	1.6	219	
Lubrecht Forest	13C8	5400	5/1	No sn	OV.	00	1.0	-	-	-	-	
North Fork Jocko	13B7	6330	5/1	97	42.9	35.1	13.4	59.6	-	35.6	118	
Pipestone Pass	12D1	7200	5/1	21:	6.1	0.3	€.3	9.2	1.0	2.0	306	
Rainy Lake	13B6	4200	5/1	Under	water	00	00	: 10.2	T	-	-	
Stemple Pass	13C1	6900	11/30	31	8.8	11.2	11.2	11.2	6.3	5.9	149	
Tenmile, Lower	1202	6250	5/2	18	5.4	-00	5.1	8.9	0.2	2.0	270	
Tenmile, Middle	1203	6800	5/2	35	11.8	1.7	11.2	16.3	3.5	6.3	187	
Tenmile, Upper	12Cl;	8000	5/2	1:11	16.2	5.9	14.8	18.5	7.1	10.2	159	
*Lockout	1532	5250	5/1	70	29.8	25.9	27.5	45.1	21./	22.6	131	



MONTANA SHOT SURVEYS May 1, 1953

COLUMNIA BASIN	No.	Elev.	Date of Survey 1953	Snow Depth (In.) 1953	Water Content (Inches)					
Drainage Basin & Snow Course *		22071			hiay 1 1953	Past Records Avera	age Data e May 1 a % Avg. r			
KOOTENAI							S			
Blue Bird Brush Creek Fernie New Fernie Marble Canyon Red Mt., Montana Sincleir Pass Sullivan Mine Gray Creek	liAl UtAl Canada Canada Canada 15Al Canada Canada Canada	6800 5000 3500 1100 5000 6000 14500 5100 5100	L/30 L/30 L/30 L/30 L/30 5/1 L/30 5/1 L/26	105 27 15 25 35 51 4 26 50	45.5 10.3 3.8 5.1 14.7 20.9 1.7 10.2 17.7	31.9 LH. II 53.7 56.7 36. 2.3 8.6 17.1 - 5.6 00 2.1 7.7 00 2. 00 11.1 7.3 19.1 16.7 10.2 13. 9.1 19.9 31.1 16.5 15. 00 3.1 3.2 0.2 1.7 7.2 12.9 16.6 7.9 10.5 15.5 19.7 21.5 18.1 19.6	1 112 6 1 138 16 2 142 7			
BITTERROOT										
Gibbons Pass Nezperce Camp Nezperce Pass *Kit Carson	13D2 14D2 14D1 14D3	7100 5580 6575 4700	5/1 4/28 5/1 5/1	67 35 46 5	28.7 12.0 16.1 1.1	21.8 23.6 28.3 22.9 19.6 11.0 14.9 13.1 6.0 14.1 12.2 13.3 18.6 12.9 9.7 - 0.5	1 273 17 7 166 17			





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